NON-PUBLIC?: N
ACCESSION #: 8804140036

LICENSEE EVENT REPORT (LER)

FACILITY NAME: Millstone Nuclear Power Station Unit 1 PAGE: 1 of 3

DOCKET NUMBER: 05000245

TITLE: Reactor Scram on Low Water Level
EVENT DATE: 03/12/88 LER #: 88-003-00 REPORT DATE: 04/07/88

OPERATING MODE: N POWER LEVEL: 100

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR SECTION
50.73(a)(2)(iv)

LICENSEE CONTACT FOR THIS LER:
NAME: Edward J. Lindsay, Senior Engineer
TELEPHONE #: 203-447-1791 Ext. 4192

COMPONENT FAILURE DESCRIPTION:
CAUSE: X SYSTEM: SJ COMPONENT: PS MANUFACTURER: M225
REPORTABLE TO NPRDS: Y

SUPPLEMENTAL REPORT EXPECTED: No

ABSTRACT: On March 12, 1988 at 0518 hours while at 100 percent reactor power (530 degrees F, 1033 psig) a full reactor scram occurred on low reactor water level (+8 inches). The low reactor water condition was the result of the trip of "A" Reactor Feed Pump. Operations personnel manually started a standby feed pump but due to problems in the feedwater flow control circuitry reactor level continued to decrease with subsequent full scram and standby gas treatment system initiation. All other systems functioned as expected. No safety consequences resulted from this event.

(End of Abstract)

I. Description of Event

On March 12, 1988 at 0518 hours with reactor power at 100 percent, a full reactor scram occurred on low reactor water level (+8 inches). The low reactor water condition was due to the trip of "A" Reactor Feed

Pump. The Senior License Operator on shift noticed the "A" feed pump light indication go from red to green indicating the pump had tripped. There were no alarms to indicate the pump had tripped due to any particular condition. The operator started the standby feed pump within 5 seconds of the trip of "A" feed pump. Approximately 10 seconds later, the reactor scrammed due to a low reactor water level condition.

II. Cause of Event

An investigation began into the cause of the feed pump trip. Time History plots of the event provided from the plant process computer were reviewed in conjunction with the post trip logs and sequence of events data. Operations personnel were interviewed regarding the event. No conclusions could be drawn as to the cause of the pump trip. There were no alarms indicating why the pump had tripped or that it had tripped. Breaker operation and all protective pump trips were then reviewed by Instrumentation and Control and Production Test personnel. The only discrepancy found was the failure of the feed pump low suction pressure switch to close on low pressure. Prior to the pump trip, the pump had adequate suction pressure as evident from process computer data. Since the switch failure was the only discrepancy found in all of the feed pump protective trips it is felt that this switch may have been the cause of the pump trip. The switch was subsequently replaced, calibrated and tested satisfactorily. During review of the time history plots it appeared that the start of the standby feed pump should have corrected the low level condition and prevented the reactor scram. A second investigation was initiated as to the reason why the level was not restored upon starting of the standby pump. Initially it appeared that the start of the standby pump would restore reactor water level but the feedwater regulation valves went closed approximately ten seconds after the pump start. The valves re-opened ten seconds later but the reactor scram had already occurred. When "A" pump tripped the remaining operating feed pump went immediately into the flow control mode of operation to prevent pump runout. This mode uses a fixed controller setpoint to limit feedwater flow to prevent pump runout. The setpoint is established based on the number of feedwater pumps running. As soon as the second feedwater pump was started the flow control logic attempted to switch over to two pump operation by changing the setpoint to the blind controller. Subsequent investigation revealed that the setpoint to the blind controller circuitry had failed directing the feedwater regulation valves to close. The failure occurred in relay 601-111 that provides the setpoint to the blind controller. The cause of this failure was due to oxidation of the relay contacts. The contacts were

cleaned and applicable portions of Surveillance Test SP-419B "Feedwater

Coolant Injection-Feedwater Regulation Valve" were then performed satisfactorily and the system returned to service.

III. Analysis of Event

Reactor water level decreasing to +8 inches resulted in actuation of the reactor protection system, and therefore is reportable in accordance with 10CFR50.73 (A)(2)(iv). The decrease in reactor water level also resulted in the initiation of the standby gas treatment system is also reportable under 10CFR50.73(A)(2)(iv).

IV. Corrective Action

The "A" Feedwater Pump low suction pressure switch was replaced, recalibrated and tested satisfactorily.

The contacts of relay 601-111 were cleaned and applicable portions of Surveillance Test SP-419B "Feedwater Coolant Injection-Feedwater Regulation Valve" were then performed satisfactorily and the system returned to service.

Test instrumentation has been installed to monitor and record any trip signals initiated due to 'A' feedwater pump low suction pressure or low lube oil pressure since these signals are not annunciated in the control room. An investigation is also being performed to identify any process control circuitry that may have similar problems. Replacement of the contacts of relay 601-111 with gold contacts is also being evaluated.

V. Additional Information

None.

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NORTHEAST NUCLEAR ENERGY COMPANY (203) 665-5000

April 07, 1988

MP-11704
Re: 10CFR50.73(a)(2)(iv)

U. S. Nuclear Regulatory Commission
Document Control Desk
Washington, D. C. 20555

Reference: Facility Operating License No. DPR-21
Docket No. 50-245
Licensee Event Report 88-003-00

Gentlemen:

This letter forwards Licensee Event Report 88-003-00 required to be submitted within thirty (30) days pursuant to the requirements of 10CFR50.73(a)(2)(iv).

Yours truly,
NORTHEAST NUCLEAR ENERGY COMPANY
/s/ Stephen Scace
Stephen E. Scace
Station Superintendent
Millstone Nuclear Power Station

SES/EJL:mo
Attachment: LER 88-003-00
cc: W. T. Russell, Region I
W. J. Raymond, Senior Resident Inspector

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